

In January, 1915, complaints were lodged with the Commission in respect to contravention of the provisions of the Constitution relating to trade and commerce. In this connection, the case of the Commonwealth of Australia v. The State of New South Wales and another was subsequently heard before the Commission, but on an appeal to the High Court against its decision it was held that under section 101 of the Constitution the Interstate Commission had not been given judicial powers.

On the 14th September, 1915, the Minister for Trade and Customs requested the Commission to furnish for the information of Parliament a report as to the new industries which, in its opinion, could with advantage be established in the Commonwealth, and in pursuance of this request such report was prepared and presented.

On the 7th March, 1916, the Commission was entrusted with an inquiry into the subject of British and Australian trade in the South Pacific, with the result that a report was furnished which deals with all factors affecting the progress of the island possessions in which Great Britain and Australia are interested.

On the 19th April, 1916, the Commission was invited by the Postmaster-General, on behalf of the Commonwealth and the several States, to act as arbitrator on the question of charges, etc., by the Railway Commissioners of the States for the carriage of mails. Subsequently sittings were held in this matter and decisions and awards made.

On the 4th August, 1917, the Prime Minister, as the result of complaints made to him, requested the Commission to inquire into the causes of increased prices of food, clothing, house rent, etc. This inquiry is now in progress, and interim reports are being presented as it proceeds. In connection with this investigation a regulation under the War Precautions Act was passed to permit each Commissioner to sit alone, and while so sitting to exercise all the powers of investigation conferred by the Interstate Commission Act of 1912.

The Chief Commissioner (Mr. A. B. Piddington, K.C.) is a member of the Commonwealth Advisory Council of Science and Industry. Mr. Commissioner Swinburne, who is also a member of the Commonwealth Advisory Council, is chairman of the Central Board of the Business Administration in connection with the Department of Defence.

Mr. Commissioner Lockyer was granted six months' leave from 15th October, 1917, for the purpose of complying with the desire of the Government that he should act temporarily as Comptroller and supervise the organisation of the Department which will administer the Australian Soldiers Repatriation Act. Mr. Stephen Mills, Comptroller-General, Department of Trade and Customs, was thereupon appointed a Deputy-Commissioner.

§ 14. Commonwealth Advisory Council of Science and Industry.

1. General. An account of the origin of the Advisory Council and the proceedings which led to its formation was given in Year Book No. 9 (p. 1135). The Advisory Council was appointed by order of the Governor-General in Council on the 16th March, 1916. Since that date certain additional appointments have been made, so that the council now consists of thirty-six members representative of both science and industry, and includes members from all the Australian States. It is a temporary body, designed to prepare the ground for a proposed permanent Institute of Science and Industry, and to exercise in a preliminary way the functions that will in future belong to the Institute. The chief of these functions are—

- “(i.) To consider and initiate scientific researches in connection with, or for the promotion of, primary or secondary industries in the Commonwealth”; and
- “(ii.) the collection of industrial scientific information and the formation of a Bureau for its dissemination amongst those engaged in industry.”

The Advisory Council itself has held only three meetings, viz., the inaugural meeting in April, 1916, and meetings in August, 1916, and July, 1917, called to receive reports and at which certain resolutions referred to below were passed. The work of the Council has been done by means of committees.

(i.) *The Executive Committee.* In accordance with instructions given by the then Acting Prime Minister, the Advisory Council at its first meeting elected an Executive committee of six members. Four additional members of the Executive have since been appointed. It was decided that the Prime Minister, or in his absence a Minister representing him, should be chairman of the Executive committee. In addition, it was decided that the chairman of each State committee should be *ex officio* a member of the Executive in order to keep the various committees in touch with one another. Such *ex officio* members were to receive copies of the Executive's minutes, and to keep in touch with it by correspondence, but were not expected to attend its ordinary meetings except when they happened to visit Melbourne. Similarly, the Executive receives copies of the minutes of each State committee. In addition a monthly summary of the work of the Executive is sent to all the members of each of the State committees.

(ii.) *The State Committees.*—At the first meeting of the Advisory Council it was decided that all of its members resident in any one State should form a local committee to co-operate with the Central Executive, especially in relation to questions involving local industries. By arrangement with the Commonwealth Government, certain additional members of the Advisory Council were added to the original list, so as to insure that there should be at least three such members available for the formation of each State committee, and it was decided that the chairman of each of these should be *ex officio* a member of the Executive, as explained above. Further procedure was formulated whereby any State committee could be strengthened by the appointment of associate members, representative of particular branches of science or industry. The associate members of the State committees are not members of the Advisory Council. A State committee has been established in each State.

It is to be noted that these so-called State committees are really local committees of the Federal organisation, their members and associate members being appointed by the Commonwealth Government. They must be clearly distinguished from certain "New Industries" and "Research" committees, which have originated as separate organisations in some of the States.

The chief functions of these State committees are to collect locally such information as may be required by the Executive, and to forward to the Executive such recommendations as local knowledge or local enquiries may suggest. They have no independent executive or financial powers, but they are an extremely important part of the business machinery.

2. Summary of the Work of the Council.—An account of the work carried out by the Council is given in the report of the Executive Committee up to the 30th June, 1917, but since that time considerable progress has been made. The work may be summarised under the following heads:—(i.) Preliminary work; (ii.) Systematic enquiries and investigations under the control of special and standing committees; (iii.) Conferences; (iv.) Miscellaneous.

(i.) *Preliminary Work.*—This work has been largely completed and comprises:—

1. A register or census—(a) of Australian industries, their distribution and importance; (b) of problems connected with them; (c) of the equipment and *personnel* of laboratories throughout the Commonwealth available for industrial scientific research; (d) of research work in actual progress in laboratories and at Government experimental farms; (e) of the facilities available for training scientific investigators.

2. The establishment of relations with other authorities, such as State Governments, scientific and technical departments, universities, technical colleges, scientific societies and associations, and committees representing the pastoral, agricultural, manufacturing, and other industries.
3. The encouragement and co-ordination of researches already in progress.

(ii.) *Special Committees.*—After making full enquiries and collecting all available information from reports and experts on any special question, the Executive has adopted the plan of appointing in each approved case a small special committee either to report further or to carry out actual experimental investigations. In forming these committees, special attention has been paid to securing adequate representation on the industrial as well as the scientific side. Twenty-six special committees have been appointed, and most of them have issued either interim or final reports. An account of the work carried out by these committees up to 30th June, 1917, appears in the last report of the Executive committee. In cases where the investigations have been completed or are sufficiently advanced for publication the results have been made available in the form of Bulletins, of which six have been published. Others are in course of preparation.

The following is a list of the special committees established up to April, 1918:—

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| 1. Ferro Alloys (Melbourne). | 15. Grass Tree Resin (Adelaide). |
| 2. Mode of Occurrence of Gold in Quartz (Bendigo). | 16. Development of Mechanical Cotton Picker (Brisbane). |
| 3. Alunite (Melbourne). | 17. Utilisation of Phosphatic Rocks (Melbourne, Sydney and Perth). |
| 4. Yeasts and Breadmaking (Sydney). | 18. Life History of the Cattle Tick (Brisbane). |
| 5. Damage by Insects to Grain in Store (Sydney). | 19. Substitutes for Tin Plate (Melbourne). |
| 6. Purification of Damaged Wheat by Lime (Melbourne). | 20. Commercial Utilisation of Kelp (Hobart). |
| 7. Electrical Sterilisation of Milk (Sydney). | 21. Blow-fly Pest (Brisbane). |
| 8. Tanning Methods (Sydney). | 22. Cold Storage Problems (Melbourne and Sydney). |
| 9. Utilisation of Mangrove Bark for Tanning (Brisbane). | 23. Tuberculosis in Stock (Sydney, Melbourne, Adelaide, Perth & Hobart). |
| 10. Utilisation of Redgum for Tanning (Perth). | 24. Bye-products of Wool-Scouring Industry (Geelong). |
| 11. Means of Transmission of Worm Nodule Parasite (Sydney). | 25. Nitrogen Requirements of Australia (Melbourne). |
| 12. Control of Sparrow Pest (Adelaide). | 26. Classification of Imports of Chemicals (Melbourne). |
| 13. Alcohol Fuel and Engines (Melbourne). | |
| 14. Posidonia Fibre (Sydney). | |

The members of these special committees act in a purely honorary capacity. Grants are made from the funds of the Advisory Council for the purchase of apparatus and equipment, and for the reimbursement of travelling and out-of-pocket expenses of the members of the committees whilst engaged on the work. In a number of cases salaried investigators and assistants are employed to give their whole time to the work under the direction of the several committees.

(iii.) *Standing and other Investigational Committees.*—In cases where the investigational work is of a permanent or prolonged nature, standing committees have been established. These include the Chemicals Committee, the committees inquiring into the marine biological economics of tropical Australia, the committee on the metric system and decimal coinage, the committee on native grasses and fodder plants, and the seed improvement committee which has been established to undertake the examination, comparison and classification of different varieties of cereals.

In addition certain investigations are being conducted in co-operation with committees established by other institutions, such as the Society of Chemical Industry of Victoria, the New South Wales Pastoral Committee for the blow-fly pest, and the Electrical Association of Australia.

In the case of the flax industry a committee has been established under the War Precautions Act to control and develop the industry. It is anticipated that the action taken by the Advisory Council in this matter alone will result during the present season in an increase in wealth produced, which will pay several times over for the total expenditure on the work of the Advisory Council from the day of its inception.

There are a number of other matters of importance under investigation which have not yet reached the stage at which they can be referred for systematic work by committees of experts, or which cannot be dealt with adequately until the permanent institute is established. These include paper-pulp, the prickly-pear pest, the control and eradication of certain weed-pests, destructive distillation of hardwoods, and other problems affecting forest products, ceramics, enamels and glazes, diseases of stock, the introduction of new plants, and cultivation in arid and semi-arid regions.

(iv.) *Conferences.*—An Interstate conference of agricultural scientists was held under the auspices of the Advisory Council towards the end of 1917, and has already been productive of results of much value. A conference was held in Brisbane in January, 1918, to devise a scheme of co-operative action between the Commonwealth and New South Wales and Queensland State Governments for the repression, with a view to the eradication, of the cattle-tick pest. The report of this conference has been published as Commonwealth Parliamentary Paper No. 40, 1917-18. The Advisory Council was represented at the Interstate Forestry Conference held at Perth in 1917, and as a result is taking action for the compilation of data on a uniform basis on the forest products of Australia. This is one of the first steps necessary towards the establishment of a Forest Products Laboratory. Other conferences are projected.

(v.) *Miscellaneous.*—A large number of inquiries and investigations of a varied nature have also been made. Some of these have reached finality, others are still receiving attention. They have arisen largely through inquiries made by persons engaged in industries for advice on scientific and technical matters and by inventors or discoverers of new processes or raw materials. At present they fall into no considered plan, but it is probable that many of those which are still receiving attention will find their place later in some co-ordinated scheme of work under the permanent institute.

3. Publications and Supply of Information. The Executive Committee has issued three reports dealing with its work, the last covering the period from its appointment up to 30th June, 1917. It has also begun to publish bulletins on the researches carried out under its auspices, those already issued or about to appear being :—

1. The cattle tick in Australia.
2. Worm nodules in cattle.
3. The alunite deposits of Australia and their utilisation.
4. The factors influencing gold deposition in the Bendigo goldfield.
5. Wheat storage problems (damaged grain and insect pests).
6. Power alcohol: Proposals for its production and utilisation in Australia.
7. Agricultural research in Australia.

Other publications issued by the Advisory Council are:—Memorandum on the Organisation of Scientific Research Institutions in the United States of America, by G. Lightfoot; Recent developments in the organisation of National Industrial Research

Institutions, by G. Lightfoot; The Economics of Trochus niloticus, by C. Hedley; The Physiography of Australian Rains, by Griffith Taylor; and Resolutions passed by the Advisory Council, July, 1917, together with report and recommendations on the organisation and work of the proposed permanent Institute of Science and Industry.

Information is being collected and indexed for the use of the Bureau of Information, which will be one of the sections of the proposed future institute. In connection with this work steps are being taken to prepare a catalogue of the scientific and technical periodicals in all the libraries of Australia.

A considerable amount of information on a great variety of topics has already been supplied to applicants from all parts of Australia.

4. The Proposed Permanent Institute of Science and Industry.—At its last meeting in July, 1917, the Advisory Council passed among others the following resolutions:—

1. That the Advisory Council is of the opinion that the immediate establishment of the permanent institute is a matter of urgency, as the financial and executive powers of the temporary organisation are wholly inadequate to the purposes in view.
2. That in the work of the future institute provision be made for co-operation between the Commonwealth and State Governments. It is suggested that this might be effected by arranging for the estimates of expenditure of the institute to be discussed at the Premiers' Annual Conference.

The Council also adopted a report and recommendations which had been drawn up by the Executive Committee, setting out the general features of the organisation and work of the proposed permanent Institute of Science and Industry. The recommendations are substantially the same as those drawn up by the committee of the conference held in January, 1916, which were published in Year Book No. 9. Certain modifications have, however, been introduced in the light of eighteen months' experience.

The principal recommendations are as follows:—

1. There should be established, under Act of Parliament, a Commonwealth Institute of Science and Industry.
2. The functions of the institute should be:—
 - (i.) To consider and initiate scientific researches in connection with, or for the promotion of primary or secondary industries in the Commonwealth.
 - (ii.) The collection of industrial scientific information, and the establishment of a Bureau of Information for the benefit of those engaged in industry.
 - (iii.) The establishment of National Laboratories.
 - (iv.) The general control and administration of such laboratories, when established.
 - (v.) To promote the immediate utilisation of existing institutions, whether Federal or State, for the purposes of industrial scientific research.
 - (vi.) To make recommendations from time to time for the establishment or development of special institutions or departments of existing institutions for the scientific study of problems affecting particular industries and trades.
 - (vii.) The establishment and award of industrial research studentships and fellowships, to include either travelling fellowships or fellowships attached to particular institutions.
 - (viii.) To draw attention to any new industries which might be profitably established in the Commonwealth.

- (ix.) To keep in close touch with, and seek the aid of all Commonwealth and State Government departments, learned and professional societies, and private enterprises concerned with, or interested in scientific industrial research.
- (x.) The co-ordination and direction of scientific investigation and of research and experimental work, with a view to the prevention of undesirable overlapping of effort.
- (xi.) To recommend grants by the Commonwealth Government in aid of pure scientific research in existing institutions.
- (xii.) To seek the co-operation of and to advise the educational authorities and scientific societies in the States, with a view to—
 - (a) Advancing the teaching of science in schools, technical colleges, and universities, where its teaching is determined by those authorities.
 - (b) The training of investigators in pure and applied science and of technical experts.
 - (c) The education of skilled artisans.
- (xiii.) To report annually and from time to time to Parliament.

3. *Constitution of Institute.*

- (i.) That for the purpose of controlling and administering the Institute three highly-qualified salaried directors, of whom one should be chairman, shall be appointed by the Governor-General in Council.
- (ii.) That of the three directors one should be an expert business and financial man, with ability in organisation; the other two should be chosen mainly on account of scientific attainments and wide experience.
- (iii.) That the tenure of the directors shall be fixed by the Act.
- (iv.) That an Advisory Council, representing Science and the principal Primary and Secondary Industries, be appointed in each State, who shall advise the directors in respect to the affairs of the Institute. That the directors shall meet each Advisory Council at least once a year.
- (v.) That the members of the Advisory Council in each State be appointed by the Governor-General in Council on the nomination of the State Government, and should receive fees for attendance.
- (vi.) That the staff of the Institute should be appointed by the Governor-General in Council on the recommendation of the directors, and should be exempted from the operation of the Public Service Act.

§ 15. Department of Chemistry, South Australia.*

In South Australia, a Department of Chemistry was formed in 1916. The Department is largely engaged in the chemical investigation of local products and industries. A series of bulletins is in course of publication. Up to July, 1918, nine had been issued as follows:—

- No. 1.—*Paper Making*: An investigation into the prospects of establishing a paper-making industry in South Australia. A number of local materials have been investigated, and special attention is directed to straw as the most valuable available material, owing to the very large supply obtainable at a low price and near to the principal sea-ports.

* Information supplied by the Director, Dr. W. A. Hargreaves, D.Sc., M.A., F.I.C.